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Committee on the Peaceful Uses of Outer Space
Scientific and Technical Subcommittee
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Draft report

III. Space technology for socioeconomic development in the context of the United Nations Conference on Sustainable Development and the post-2015 development agenda

1. In accordance with General Assembly resolution 70/82, the Subcommittee considered agenda item 6, "Space technology for socioeconomic development in the context of the United Nations Conference on Sustainable Development and the post-2015 development agenda".

2. The representatives of Argentina, Egypt, Germany, Japan and South Africa, as well as the representative of Chile, on behalf of the Group of Latin American and Caribbean States, made statements under agenda item 6. During the general exchange of views, statements relating to the item were made by representatives of other member States.

3. The Subcommittee heard the following scientific and technical presentations:

(a) "SpacePharma", by the representative of Israel;

(b) "DLR contributions to face global challenges: protection of the environment, climate change, disaster management", by the representative of Germany;

(c) "Increasing food security by using satellite-enhanced crop insurance and disaster management", by the representative of Switzerland;

(d) "Samara State Aerospace University: potential for cooperation with scientific and educational centres in developing countries", by the representative of the Russian Federation;

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(e) "Nile River and sustainable development in Egypt", by the representative of Egypt;

(f) "Space-related activities of OECD", by the observer for the Organization for Economic Cooperation and Development (OECD).

4. The Subcommittee had before it the following documents:

(a) Note by the Secretariat entitled "Fiftieth anniversary of the United Nations Conference on the Exploration and Peaceful Uses of Outer Space: theme of the sessions of the Committee on the Peaceful Uses of Outer Space, its Scientific and Technical Subcommittee and its Legal Subcommittee in 2018" (A/AC.105/L.297);

(b) Conference room paper entitled "UNISPACE+50 thematic priorities: proposal submitted by the Steering Committee of UNISPACE+50" (A/AC.105/C.1/2016/CRP.18);

(c) Conference room paper entitled "Report of the expert group on space and global health" (A/AC.105/C.1/2016/CRP. 21).

5. The Subcommittee noted that 2015 had been a milestone year during which the international community had adopted mutually interdependent and strategic agendas, the Sendai Framework for Disaster Risk Reduction 2015-2030, the 2030 Agenda for Sustainable Development and the Paris Agreement on climate change.

6. In that regard, the Subcommittee recalled that the General Assembly, in its resolution 70/82, had expressed its conviction that space science and technology and their applications, such as satellite communications, Earth observation systems and satellite navigation technologies, provided indispensable tools for viable long-term solutions for sustainable development and could contribute more effectively to efforts to promote the development of all countries and regions of the world, stressing the need to harness the benefits of space technology towards implementing the 2030 Agenda for Sustainable Development.

7. The Subcommittee recalled that in 2015, the Committee on the Peaceful Uses of Outer Space had endorsed the workplan for the UNISPACE+50 process, as contained in document A/AC.105/L.297, which would provide a further opportunity for the Committee and its subsidiary bodies to build on the global development agenda, as adopted by the three global summits in 2015.

8. Some delegations expressed the view that UNISPACE+50 provided a timely opportunity to strengthen international cooperation in the peaceful uses of outer space and capacity-building in that area, in particular for the benefit of developing countries.

9. Some delegations expressed the view that advances in space science and technology and the rapid evolution of the space agenda, taken together with changes in the concept of space security and the presence of new space actors, including the expansion of the commercial sector, all posed new challenges. In order to address them effectively, consideration should be given to the creation of new legally binding instruments and other mechanisms, such as guidelines, codes and other transparency and confidence-building measures, with the joint aim of finding solutions to the problems faced by humanity, including in the context of sustainable

development. Those delegations were also of the view that meeting those challenges would require the strengthening of the role of the Committee on the Peaceful Uses of Outer Space and the Office for Outer Space Affairs.

10. The Subcommittee noted that space science and technology and their applications, as important enablers of economic, social and cultural development and contributors to, in particular, poverty eradication, held immense potential to benefit both developed and developing countries and had a central role to play in achieving the goals of the 2030 Agenda for Sustainable Development.

11. In that regard, the Subcommittee noted the ongoing efforts by the international community to implement the 2030 Agenda for Sustainable Development, including the adoption of the African Space Policy and Strategy by the African Union Heads of State and Government during the twenty-sixth session of the African Union, held in Addis Ababa on 31 January 2016.

12. The Subcommittee noted the crucial role of Earth observation data, compiled at the local, regional and global levels, which provided for sound decision-making and for early warning measures in the event of epidemics and infectious diseases. In this regard, the Subcommittee reaffirmed the importance of the work of the Expert Group on Global Health and Space, established by the Subcommittee in 2014.

13. The Subcommittee noted with appreciation the e-publication *Space for Agriculture Development and Food Security*, which built upon the efforts of the Inter-Agency Meeting on Outer Space Affairs in those areas and had been prepared by the Office for Outer Space Affairs and made available on its website at www.unoosa.org.

14. The Subcommittee also commended the Office for Outer Space Affairs for having launched a series of high-level forums (2016-2018) on the theme "Space as a driver for socioeconomic sustainable development", a timely and pertinent initiative aimed at creating a platform for the international community to further explore the contributions of space science and technology to global development as well as an opportunity to forge new partnerships and set new frameworks of international cooperation in the lead-up to UNISPACE+50 in 2018.

15. The Subcommittee noted that the European Space Policy Institute was planning a series of dialogues in 2016 on space for sustainable development in order to engage various actors, ranging from spacefaring and non-spacefaring countries to non-governmental entities.

16. The Working Group of the Whole was reconvened under the chairmanship of Chiaki Mukai (Japan), in accordance with paragraph 8 of General Assembly resolution 70/82. At its [...] meeting, on [...] February, the Subcommittee endorsed the report of the Working Group of the Whole, which is contained in annex I to the present report.

V. Space debris

17. In accordance with General Assembly resolution 70/82, the Subcommittee considered agenda item 8, "Space debris".

18. The representatives of China, Egypt, France, Germany, India, Indonesia, Italy, Japan, Pakistan, the Republic of Korea, the Russian Federation, the United States and Venezuela (Bolivarian Republic of) made statements under agenda item 8. A statement was made under the item by the representative of Chile on behalf of the Group of Latin American and Caribbean States. During the general exchange of views, statements relating to the item were also made by representatives of other member States.

19. The Subcommittee heard the following scientific and technical presentations:

(a) "United States space debris environment, operations and modelling updates", by the representative of the United States;

(b) "The Inter-Agency Space Debris Coordination Committee (IADC): an overview of IADC annual activities" and "One Web", by the representatives of the United Kingdom;

(c) "Overview of space debris-related activities in France in 2015", by the representative of France;

(d) "Recent developments of the International Scientific Optical Network project", by the representative of the Russian Federation.

20. The Subcommittee had before it the following documents:

(a) Information on national research on space debris, the safety of space objects with nuclear power sources on board and problems relating to the collision of such objects with space debris, in replies received from Member States and international organizations (A/AC.105/C.1/110 and A/AC.105/C.1/2016/CRP.8);

(b) Conference room paper entitled "Compendium of space debris mitigation standards adopted by States and international organizations" (A/AC.105/C.1/2016/CRP.9);

(c) Conference room paper entitled "International cooperation in the peaceful uses of outer space: activities of Member States" (A/AC.105/C.1/2016/CRP.10), containing a reply by the Czech Republic regarding international cooperation in the field of space debris mitigation.

21. The Subcommittee expressed concern at the increasing amount of space debris and encouraged those States, including agencies, industries and academia, which had not yet done so to consider voluntary implementation of the Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space.

22. The Subcommittee agreed that States, in particular spacefaring nations, should pay greater attention to the problem of collisions of space objects, including those with nuclear power sources on board, with space debris and to other aspects of space debris, including its re-entry into the atmosphere. In this regard, the Subcommittee encouraged continuous reporting by States on the status of their implementation of the Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space.

23. The Subcommittee noted with satisfaction that some States were implementing space debris mitigation measures consistent with the Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space and/or the

IADC Space Debris Mitigation Guidelines and that a number of States had developed their own space debris mitigation standards based on those guidelines.

24. The Subcommittee noted that other States were using the IADC Guidelines and the European Code of Conduct for Space Debris Mitigation as reference points in their regulatory frameworks for national space activities. The Subcommittee also noted that other States had cooperated, in the framework of the European Union-funded space surveillance and tracking support framework and the European Space Agency space situational awareness programme, in addressing the issue of space debris.

25. The Subcommittee noted with appreciation that States had adopted a number of approaches and concrete actions to mitigate space debris, including the improvement of the design of launch vehicles and spacecraft, the reorbiting of satellites, passivation, end-of-life operations and the development of specific software and models for space debris mitigation.

26. The Subcommittee noted that research and implementation were being conducted in the areas of the development and improvement of space debris mitigation, modelling and measurement, as well as technology for space debris observation and continuous monitoring, space debris re-entry and fragmentation prediction and notification, collision avoidance and modelling of collision probability, in-orbit robotic servicing of satellites, space debris removal, and technologies to protect space systems from space debris and to limit the creation of additional space debris.

27. The Subcommittee acknowledged the continuing work of IADC, whose initial work served as the basis for the Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space, and noted that IADC continued its work to characterize the space debris environment and evaluate improvements to its own space debris mitigation guidelines.

28. The view was expressed that, notwithstanding the Space Debris Mitigation Guidelines, the orbital environment had been deteriorating such that the situation had become critical, and it was increasingly apparent that space debris mitigation activities should be further encouraged. The delegations expressing that view also stated that the recent situation showed that measures to protect even unmanned orbital spacecraft from damage caused by space debris impact were crucial, as once a collision with large debris had occurred, the orbital environment could quickly deteriorate further, and even tiny debris could cause loss of function in a spacecraft, potentially inviting fragmentation or collision.

29. Some delegations expressed the view that it was necessary to continue to improve the Space Debris Mitigation Guidelines of the Committee and that the Scientific and Technical Subcommittee and the Legal Subcommittee should cooperate with the aim of developing legally binding rules relating to space debris, including debris derived from space platforms with nuclear power sources on board.

30. Some delegations expressed the view that outcomes of the work of the working groups of the Subcommittee, such as the Safety Framework for Nuclear Power Source Applications in Outer Space and the Space Debris Mitigation Guidelines of the Committee, should be officially presented to the Legal Subcommittee for examination.

31. Some delegations expressed the view that the Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space remained useful in the effort to achieve worldwide acceptance and implementation of space debris mitigation measures. The delegations expressing that view called on all spacefaring nations and organizations around the world to implement the Guidelines in their space system designs and operations with a view to limiting the generation of space debris.

32. Some delegations expressed the view that the exchange of knowledge, data and analysis methods among States was essential for meaningful mitigation strategies and remediation measures.

33. Some delegations expressed the view that since space debris had been created by past operations of spacefaring countries, those countries should assist countries with emerging space programmes in the implementation of space debris mitigation measures through the provision of conjunction assessment risk analysis and situational awareness systems for the live monitoring of space objects, providing scientific and technological support, including the transfer of relevant technology, without imposing undue costs on the space programmes of the developing nations.

34. The view was expressed that a mechanism should be developed to assist emerging spacefaring nations that did not have the necessary financial and technological resources to comply with the set of the Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space.

35. The view was expressed that coordinated efforts were required to deal with the technological and financial aspects of debris removal.

36. The view was expressed that recent developments in the field of small satellites, as well as announcements by private companies to launch large constellations of satellites, had raised questions about their potential impact on the space debris environment in the short and long terms. The delegation expressing that view informed the Subcommittee that initial studies had indicated that the long-term environmental impact of constellations greatly depended on the degree of compliance with existing mitigation guidelines, in particular with regard to the end-of-life disposal of constellation members.

37. The Subcommittee noted with satisfaction that the compendium of standards adopted by States and international organizations to mitigate space debris, initiated by Canada, the Czech Republic and Germany, was continuously maintained and updated on the website of the Office for Outer Space Affairs, and encouraged Member States to provide their contributions or updates to the compendium.

38. The Subcommittee took note of paragraph 11 of General Assembly resolution 70/82, and agreed that Member States and international organizations with permanent observer status with the Committee should continue to be invited to provide reports on research on space debris, the safety of space objects with nuclear power sources on board, problems relating to the collision of such space objects with space debris and ways in which debris mitigation guidelines were being implemented.